

Long-Range System Planning

Bulletin 1724D-101

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RUS Bulletin 1724D-101

“Electric Distribution System Long-Range Planning Guide”

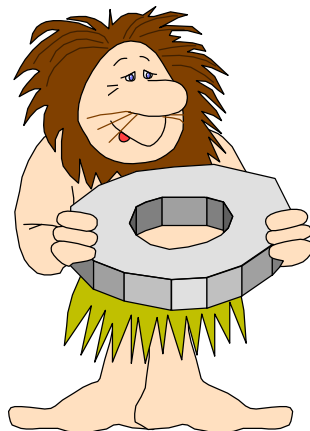
- ***Recently updated
with new guidelines***
- ***Organized like
standard, engineering
problem-solving procedure***
- ***New guidelines
promote methods
to minimize future costs***



Problem Solving & Planning

- 1. Gather & Analyze Data & Information***
- 2. Define the Problem***
- 3. Determine All Feasible Solutions***
- 4. Analyze & Compare Each Solution***
- 5. Determine & Recommend Best Solution***
- 6. Justify & Document Recommendations***

The Missing (Cost-Saving) Link



4.5

***Apply
Engineering
Economics
Using the
Time - Value
of Money***

New General Guidelines

- ***A new LRP may be postponed***
- ***Use a “One System” approach***
- ***Loads need to be consistent with system’s Load Forecasting Study***
- ***Planning period long enough to stress the system***
- ***Intermediate plans are optional***

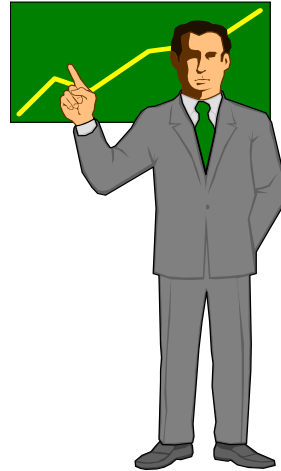
Planning By Areas; A New Viable Option

(“Areas” are regions with similar load growths and characteristics.)

- ***Disadvantages of traditionally LRP***
- ***Fast-growing areas: More timely planning***
- ***Slow-growing areas: Postpones new LRP***
- ***Each “area plan” may have different planning period***
- ***“Area” planning makes conversions to higher voltages more attractive***

Design Criteria

- ***Defines the standards for the system***
- ***Developed by Engineer***
- ***Needs agreement before study begins***
- ***Address all aspects of the system***
- ***Needs documentation and explanation***



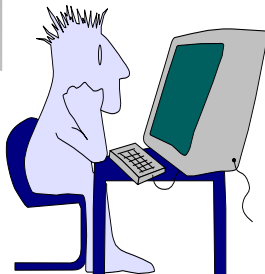
Gather Information and ...

Analyze Historical Data

(Only compile data used in and for study)

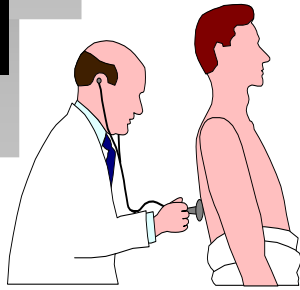
Analyze Studies, Plans & Programs

(Write concise summary reports regarding impact)



Update Maps & Computer Model

Problem Identification



☒ **ANALYZE:**

*Distribution Circuits & Equipment
Transmission Lines & Substations
Power Supply*

☒ **LISTS PROJECTED PROBLEMS**

*Primary Voltages
Conductor, Equipment Loading
Reliability, Etc.*

☒ **ENTER DATA ON SYSTEM MAPS**

Problem Solutions

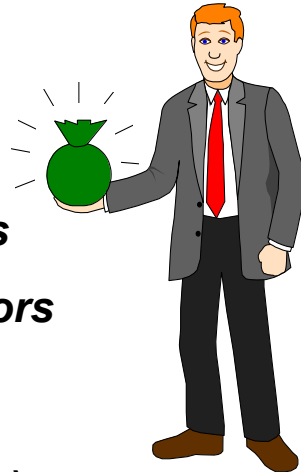


- **Usually more than 1 solution**
- **Use “Guess & Test” method**
(Feasible? Practical? Solve Problem?)
- **Estimate cost & apply engineering economics****
- **Compare costs & benefits**
- **Deteriorated lines? Keep solutions simple**





***Bulletin 1724D-104 “Engineering Economics
Computer Workbook Procedure”*

Least Costly Solutions

- ⇒ **Transfer Loads**
- ⇒ **Balance loads between phases**
- ⇒ **Replace regulators**
- ⇒ **Install line regulators and capacitors**
- ⇒ **Build tie line (and transfer loads)**



Document Recommendations

-  **Lists**
-  **Tables**
-  **Narratives**
-  **System Map (with changes)**



Write LRP Report



- **RUS “acceptable” format and details in bulletin**
- **Keep document short and to the point**
- **Map conditions of system before and recommendations**
- **Explain and “justify” recommendations**

Presentation and Approval



Present to Manager, GFR, Power Supplier & Board

Answer Questions and Modify as Needed

Needs Approval by Board Resolution

Scrutinize Study and Report

Look for:

- *Alternative Solutions*
- *Economic Analysis*
- *Good Descriptions*
- *Justification of Items*
- ***Ways to Save Money !***

